



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,855	09/23/2003	Torsten Niederdrank	P03,0381 (26965-3031)	3145
26574	7590	10/14/2008		
SCHIEF HARDIN, LLP PATENT DEPARTMENT 6600 SEARS TOWER CHICAGO, IL 60606-6473			EXAMINER LAO, LUN S	
			ART UNIT 2614	PAPER NUMBER
			MAIL DATE 10/14/2008	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/668,855

**Applicant(s)**

NIEDERDRANK ET AL.

**Examiner**

LUN-SEE LAO

**Art Unit**

2615

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 June 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 15-26 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SI/02)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Introduction*

1 This action is in response to the amendment filed on 06-27-2008. Claims 1-14 have been canceled and claims 15-26 have been added. Claims 15-26 are pending.

### *Drawings*

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “ an estimation unit connected between said signal input device and said feedback reduction device that estimates, from said electrical input signal, an estimated value of a system distance, said system distance being defined as a distance of said loop gain to a predetermined stability limit of said feedback loop, said estimation unit supplying said estimated value to said feedback reduction device and said feedback reduction device being configured to generate said at least one parameter dependent on said estimated value” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate

changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 15 and 22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

claim 15 recites "an estimated value of a system distance, said system distance being defined as a distance of said loop gain to a predetermined stability limit of said feedback loop, said estimation unit supplying said estimated value to said feedback reduction device and said feedback reduction device being configured to generate said at least one parameter dependent on said estimated value". However, the specification

does not clearly disclose how this system distance is derived from the loop gain and the predetermined stability limit of the feedback loop. It is not supported in the specification nor in any claim originally presented.

Consider claim 22 is essentially similar to claim 15 is rejected for the reason state above apropos to claim 15.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 15, 19, 20 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Kates et al. (US PAT. 6,219,427).

Consider claim 15 as base on 112 first paragraph problem states above, Kates teaches a hearing device comprising:

a signal input device(see fig.4 ((202)) configured to receive an audio input signal and to convert said audio input signal into an electrical input signal;

a signal processor (402) supplied with said input electrical signal that modifies said electrical input signal, including amplifying at least a portion of said electrical input signal with a gain, dependent on a hearing impairment to be corrected, to produce a processed signal;

a signal output device(220) supplied with said processed signal that emits an acoustical output signal dependent thereon; said signal input device, said signal processor and said signal output device forming a feedback loop that includes an acoustic feedback path(222) from said signal output device to said signal input device such that said acoustic input signal is influenced by feedback via said feedback path, said feedback loop exhibiting a loop gain that changes dependent on the amplification gain provided by said signal processor;

a feedback reduction device (402, 210,212,206) connected between said signal input device (202) and said signal output device (220) configured to adjustably reduce, compensate or damp said feedback by using at least one adjustable parameter that influences said processed signal; and

an estimation unit (402, 210,212,206,214,222) connected between said signal input device (202) and said feedback reduction device that estimates, from said electrical input signal, an estimated value of a system distance (distance being defined as between microphone and speaker of said feedback loop gain), said system distance being defined as a distance of said loop gain to a predetermined stability limit of said feedback loop(see fig. 10 and col.14 line 51-col. 15 line 30), said estimation unit supplying said estimated value to said feedback reduction device and said feedback reduction device being configured to generate said at least one parameter dependent on said estimated value (see col. 11 line 42-col. 12 line 16).

Consider claim 22 is essentially similar to claim 15 and is rejected for the reason state above apropos to claim 15.

Consider claims 19 and 20 Kates teaches a hearing aid wherein said feedback reduction device comprises a feedback compensator(see fig.4 and col. 11 line 42-col. 12 line 16); and a hearing aid wherein said feedback reduction device comprises an amplification/compression control circuit (see fig.24 and col. 20 line 33-55).

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 16, 18, 23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kates et al. (US PAT. 6,219,427).

Consider claim 16 Kates teaches a hearing aid comprising a memory, accessible by said estimation unit (402, 210,212,206,214,222 in fig.4), in which a model(210) is stored that represents a typical frequency response of a signal, and wherein said estimation device is configured to detect a first signal portion (402) and a second signal portion ( 210) from said electrical input signal (100) and to use said model to generate an estimated signal from said first signal portion that estimates said second signal portion, and to determine said estimated value from a difference of said estimated signal from said second signal portion detected from said electrical input signal (see col. 11 line 42-col. 12 line 16); but Kates does not explicitly teach a model is stored that represents a

typical frequency response of a speech signal. Since Kates does not limited what typical frequency response of a signal will be stored in a mode only.

Therefore, it would have been obvious that feedback cancellation improvements hearing aid system taught by Kates could have a model is stored that represents a typical frequency response of a speech signal as claimed base on designer's reference and needs for the purpose of acquiring the desired audio sound quality for the speech signal in the acoustical environment.

Consider claim 23 is essentially similar to claim 16 is rejected for the reason state above apropos to claim 16.

Consider claim 18 Kates teaches a hearing aid, wherein said estimation device comprises a feature extractor (see fig.4, 210) that is configured to extract respective features from said first signal portion (such as, above threshold) and said second signal portion (such as, below the threshold) for producing said estimated signal (see fig. 21 and col. 18 line 64-col. 19 line 18).

Consider claim 25 is essentially similar to claim 18 is rejected for the reason state above apropos to claim 18.

9. Claims 17 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kates et al. (US PAT. 6,219,427) in view of Kates (US PAT. 6,831,986) .

Consider claim 17 Kates (427) does not explicitly teach said estimation device extracts said first signal portion as a high-frequency portion of said electrical input signal



and extracts said second signal portion as a low-frequency portion of said electrical input signal.

However, Kates (986) teaches teach said estimation device (see fig.4 (423, 421)) extracts said first signal portion (see fig.9 (901)) as a high-frequency portion of said electrical input signal and extracts said second signal portion(see fig.9 (903)) as a low-frequency portion of said electrical input signal(see fig.9 and co1.10 line 46-co1. 11 line 42).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Kates(986) into Kates(427) to improve the gain at high frequencies while simultaneously preserving the desired tonal inputs at low frequencies.

Consider claim 24 is essentially similar to claim 17 is rejected for the reason state above apropos to claim 17.

10. Claims 21 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kates et al. (US PAT. 6,219,427) in view of Nielsen et al. (US PAT. 7,106,871) .

Consider claim 21 Kates does not explicitly teach a hearing aid wherein said feedback reduction device comprises at least one oscillation detector and at least one narrow- band filter device configured to suppress oscillations, as said at least one parameter, dependent on said estimated value.

However, Nielsen teaches a hearing aid wherein said feedback reduction device comprises at least one oscillation detector (see fig.2 (49)) and at least one narrow- band

filter device(8) configured to suppress oscillations, as said at least one parameter, dependent on said estimated value(see fig.2-3 and col. 6 line 15-col. 7 line 67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Nielsen into Kate to provide a hearing aid for feedback cancellation, which improves the result of the feedback cancellation by having fewer audible side effects and thereby gives an improved user comfort.

Consider claim 26 is essentially similar to claim 21 and is rejected for the reason state above apropos to claim 21.

### ***Response to Arguments***

11. Applicant's arguments with respect to claims 15-26 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Luo et al. (US 6,754,356) is cited to show other related the feedback compensation for hearing devices with system distance estimation.

14. Any response to this action should be mailed to:

Mail Stop \_\_\_\_ (explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:  
**(703) 872-9306**

Hand-delivered responses should be brought to:  
Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao, Lun-See whose telephone number is (571) 272-7501. The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Application/Control Number: 10/668,855

Page 11

Art Unit: 2615

Lao, Lun-See  
/Lun-See Lao/  
Examiner, Art Unit 2615  
Patent Examiner  
US Patent and Trademark Office  
Knox  
571-272-7501  
Date: 10-07-2008

/Vivian Chin/

Supervisory Patent Examiner, Art Unit 2615